



Illegal wildlife trade in Nepal: status and legitimate deed

Anjana Bogati¹, Ram Aseshwar Mandal², Ajay B Mathema³

¹MSc student, School of Environment Science and Management, Kathmandu, Nepal, Email: anjanabogati21@gmail.com; Tel: +9779865891230

²Associate professor, School of Environment Science and Management, Kathmandu, Nepal, Email: ram.mandal@gmail.com; Tel: +9779841450564

³Principal, School of Environment Science and Management, Kathmandu, Nepal, Email: ajaymathema1@gmail.com; Tel: +9779860671773

✉ **Corresponding author:**

Associate professor, School of Environment Science and Management, Kathmandu, Nepal, Email: ram.mandal@gmail.com; Tel: +9779841450564

Citation

Bogati A, Mandal RA, Mathema AB. Illegal wildlife trade in Nepal: status and legitimate deed. *Discovery*, 2021, 57(302), 164-175

ABSTRACT

Study was objectively conducted to assess status, trend, confiscated and seized trophy of wildlife fauna and its legitimate deed. Division forest offices of Kathmandu, Lalitpur and Bhaktapur were taken for study area. The dimensions of the captured trophies were measured, 25 key informants were interviewed. Similarly, documents like register, cases filed and decision register were reviewed. Result showed that, *Panthera tigris*, *Uncia uncia*, *Neofelis nebulosa*, *Canis lupus*, *Prionailurus bengalensis* and *Gavialis gangeticus* were key illegally traded species. Altogether 327 wildlife trophies were captured in Kathmandu valley. Illegally captured fauna were 12 mammals, 1 bird, 3 reptiles falls under endangered categories of IUCN Red List and 7 species were listed under endangered of IUCN Red list following by CITES I. Total 97 trophies (32%) fall under mega carnivores. Total weight of confiscated scales of Pangolin was 47.74kg in Kathmandu valley. It was 140cm length and 36cm breadth of captured leopard in Kathmandu district. Kruskal Wallis test showed that, there was significant difference in number of confiscated body parts captured in Kathmandu, Lalitpur and Bhaktapur districts at 95% confidence level. Total 381 cases were recorded in Kathmandu valley. Co-efficient variances of case registered were 0.162, 0.264 and 0.212 in Kathmandu, Lalitpur and Bhaktapur districts respectively. MannKenall's tau b correlation showed that value of correlation coefficient were 0.587, 0.305 and 0.554 in Kathmandu, Lalitpur and Bhaktapur districts respectively. Total 698 persons were involved in wildlife crime. Maximum charge was US \$1,626.90 in Bhaktapur district and maximum imprisonment period was 79 months in Kathmandu.

Key words: Illegal Trade, Status, Registered Cases, Trend, deed, Management Options

INTRODUCTION

The Convention on International Trade in Endangered Species (CITES) supported by International Union International Union for Conservation of Nature has been playing vital role in global conservation of wildlife flora and fauna. Recently 18th meeting of the Convention on International Trade in Endangered Species (CITES) revised the listing of species in Appendices I and II. Some important conservation effort was mall-clawed and smooth-coated otters; the black crowned crane; garden, horned and pygmy lizards; Grenadines clawed gecko; two box turtles and the Annam leaf turtle; the star and pancake tortoises; and two swallowtail butterflies were added under appendix I under CITES. The conference of the parties have been developing the plan and strategy to implement agreement and decision because they are the responsible to protect the wildlife accordingly (Symes *et al.*, 2018). Though main aim of such international treaty is to ensure to control the illegal wildlife trade in the country, it is challenging and precarious issues. Global threat is increasing for conservationist and nature lover (Karesh *et al.*, 2005).

The wildlife trafficking is serious issue and threat is rising to conserve wildlife in the world (Baker *et al.*, 2013; Sollund, 2013; Phelps *et al.*, 2016). The fact is not ever deniable that the efforts are continuous applying to conserve the wildlife considering to control the illegal trade of wildlife activities as major responsibility but it is unstopped and increasing unprecedentedly (Lawson *et al.*, 2014; Wyler and Sheikh, 2016). Next, associated truth comes to blame frequently that developing nations are more responsible for this because of poverty (Rosen and Smith, 2010) but the situation is also irrefutable even in developed countries as well. It was seized about 2000 live reptiles at borders of European Union in 2015. Around 23 tons illegal ivory was captured in 2011, it was assumed that for this over 2500 elephants were killed. America is huge hub of importing illegal wildlife because Americans are increasingly hunting trophies of crocodiles, bear and exotic birds (Williams and Grante, 2011; Regueira and Bernard, 2012; Challender *et al.*, 2015). The recorded in 2018 showed about 3.65 tons of ivory seized in Malawi and Zambia and 148 persons were detained. The illegal trades are importantly attract the people's attention because it is linked to poverty in developing nation (Pires *et al.*, 2016; Krishnasamy and Stoner, 2016) while as a fashion in developed countries (Smith *et al.*, 2012).

Many steps have been taking to control the illegal trade of wildlife in Asia (Basnet, 2003; Zhang *et al.*, 2008; Nijman, 2010). The record showed 2 rhinoceros iguanas, 22 Egyptian tortoises, 4 blue-tongued skinks and 3 green tree frogs were captured in India on 13 March, 2019 and leopard cub was also seized on 2 February, 2019 and local authorities of northern east of Sri Lanka captured 130 kilogram pangolin scales illegally passing to India in 2017 and for it, around 150 pangolins were killed (Paudel *et al.*, 2020). Illegal trade in India, Bhutan, China and Nepal is interlinked with each other (Bhattarai and Fischer, 2014). A report showed that, there was no record of illegal trade of red panda in India and Bhutan in 2019 but it was 13 seizures in Nepal from 2016 to 2019. So, illegal trafficking in Asia is very serious (Lindsey *et al.*, 2011; Lawson *et al.*, 2014; Duffy *et al.*, 2016).

Wildlife trafficking for illegal trade is serious issues in Nepal. Kathmandu valley is being transaction of the trophies to different countries (Khatiwada *et al.*, 2014; Ghimirey and Acharya, 2018). The trophies and trafficking are the major uncertainties to the nature lover and conservationist. As Kathmandu valley is being the main place for illegal trafficking, there is limited research regarding this. Thus, this research was conducted to assess the status of illegal trade of wildlife fauna, its trend and management efforts in Kathmandu valley.

MATERIALS AND METHODS

Kathmandu valley is located in Bagmati province in Nepal. The valley is covered by sub-tropical broad leaved forest (1000 – 2000m) the forest is largely composed of *Schima wallichii*, *Castanopsis indica* etc. *Alnus nepalensis* forest is wide extent alongside rivers and clammy place. In fact, this valley is expanded in Kathmandu, Lalitpur and Bhaktapur districts. Kathmandu is situated at 27.7172° N, 85.3240° E, Lalitpur at 27.6588° N, 85.3247° E and Bhaktapur at 27.6710° N, 85.4298° E. The climate is very cold in winter season but it is mild and sometimes very warm in summer season.

Both primary and secondary data were collected and generated. The primary data were collected through observation, measurement and applying the key informant interview. The specimens captured in Kathmandu valley were measured the trophy size, weighted and counted. Moreover, total 25 key informants were conducted with different officials and individuals responsible to know control measures of illegal trade. The key informants were division forest officer, chief warden and assistant warden, police officials and army officials who involved in protection against the illegal trade of wildlife trade in Kathmandu valley. On the other hand, secondary data were collected from documents available in division forest offices, Kathmandu, Lalitpur and Bhaktapur. Total enumeration method was used to list out filed cases, events, trophy The records of captured trophies, annual reports, decision book and related cases filed were of 2008 to 2018 were collected and photographs were these were taken using cell phone.

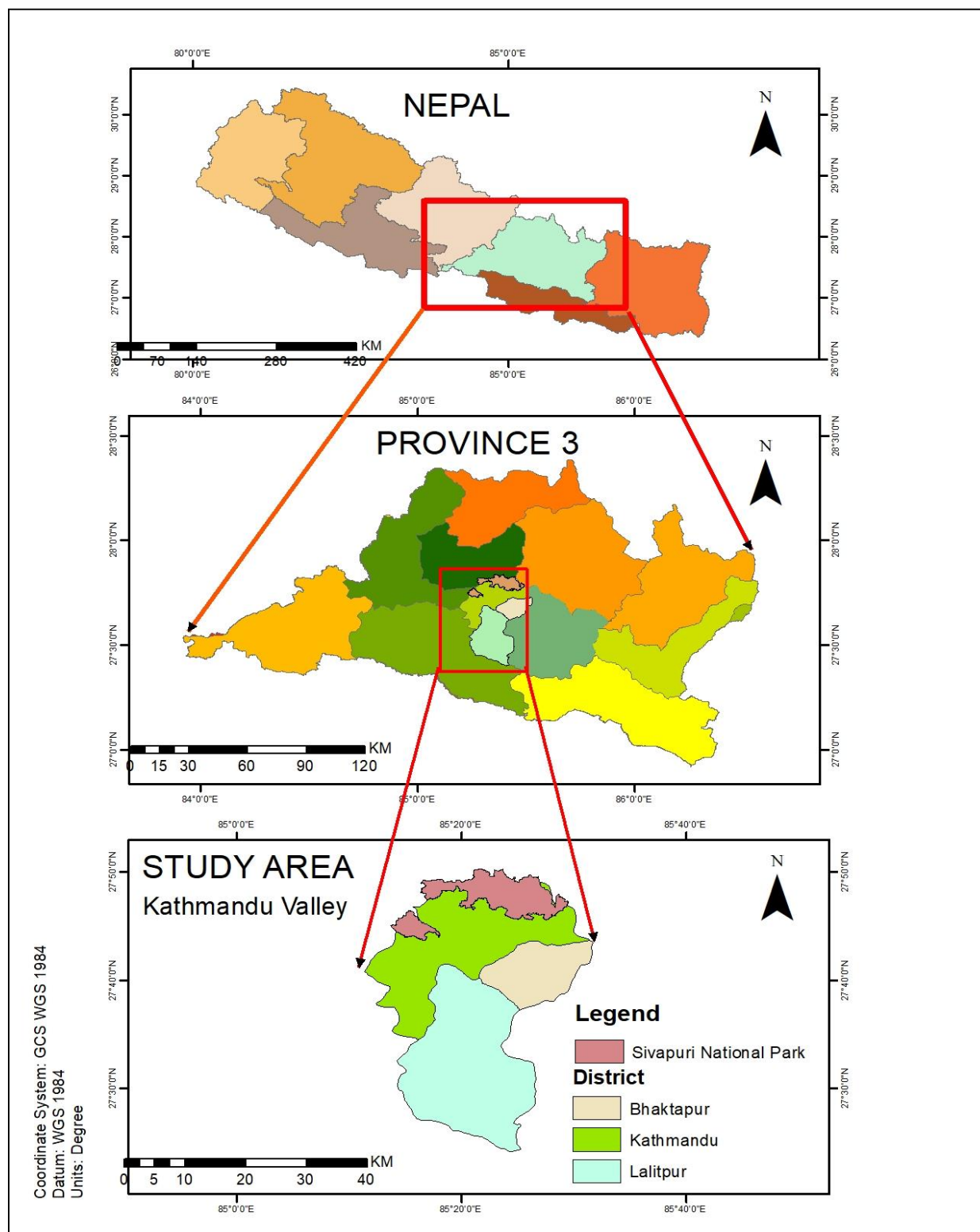


Figure 1: Study Area Map

The collected data were analyzed using descriptive and statistical analysis. The captured photographs of written document were converted into excel file to analyse it. So, these data were transformed into numerical form. The species were confirmed for the protection status under IUCN red list and CITES appendixes. The Kruskal Wallis test was applied to compare filed cases among three districts. The co-efficient variance was calculated to know the consistency in conservation efforts of division forest office. The Mann- Kendall test tau b was applied to check correlation between number cases and year.

RESULTS

3.1. Status of illegal trade of wildlife fauna in Kathmandu valley

3.1.1. Illegal Trade of Wild fauna in Kathmandu Valley.

Several species of wild live trophies were captured by division forest office of Kathmandu, Lalitpur and Bhaktapur. *Panthera tigris*, *Uncia uncia*, *Neofelis nebulosa*, *Canis lupus*, *Prionailurus bengalensis* and *Gavialis gangeticus* were key illegally traded species via Kathmandu valley. All together 327 wildlife trophies were captured from 2010 to 2019. Out of this 267, 32 and 28 trophies were captured in Kathmandu, Lalitpur and Bhaktapur districts respectively. In fact, illegally captured 12 mammals, 1 bird, 3 species of reptiles falls under endangered categories of IUCN Red List. On the other hand 7 species were listed under Endangered of IUCN Red list following by the CITES I (Table 1).

Table 1: Protection Status of illegal trade of wild fauna in Kathmandu valley

Wild Fauna Type	Scientific Name	Kathmandu		Lalitpur		Bhaktapur	
		Number	Percentage	Number	Percentage	Number	Percentage
Tiger ^{ENI}	<i>Panthera tigris</i>	7	2.92	2	6.25	5	17.86
Snow Leopard ^{ENI}	<i>Uncia uncia</i>	54	22.50	1	3.13	2	7.14
Clouded Leopard ^{ENI}	<i>Neofelis nebulosa</i>	6	2.50	1	3.13	1	3.57
Grey Wolf ^{CR}	<i>Canis lupus</i>	1	0.42				
leopard Cat ^{VUI}	<i>Prionailurus bengalensis</i>	4	1.67				
Elephant ^{ENI}	<i>Elephas Maximus</i>	7	2.92	1	3.13	2	7.14
Musk Deer ^{ENI}	<i>Moschus moschiferus</i>	24	10.00	6	18.75	5	17.86
Red Panda ^{ENI}	<i>Ailurus fulgens</i>	46	19.17	4	12.50	1	3.57
Rhino ^{ENI}	<i>Rhinoceros unicornis</i>	13	5.42	1	3.13	3	10.71
Chinese Pangolin ^{ENI}	<i>Manis pentadactyla</i>	29	12.08	1	3.13	3	10.71
Gaur ^{VUI}	<i>Bos gaurus</i>	1	0.42				
Himalayan Brown Bear ^{ENI}	<i>Ursus arctos</i>	8	3.33	3	9.38		
Otter	<i>Lutra lutra</i>	2	0.83	7	21.88	1	3.57
Cheer Pheasant ^{RI}	<i>Haliaeetus leucoccephalus</i>	17	7.08	1	3.13	1	3.57
Peacock	<i>Catreus wallichii</i>	5	2.08				
Owl	<i>Pavocristatus</i>	4	1.67				
Eagle	<i>Ketupazeylonensis</i>	2	0.83				
Tortoise	<i>Aldabrachelys gigantea</i>	3	1.25	2	6.25	1	
Python ^{VUI}	<i>Python bivittatus</i>	2	0.83	2	6.25	3	3.57
Gharial ^{ENI}	<i>Gavialis gangeticus</i>	1	0.42				10.71
Golden Monitor Lizard ^{LRI}	<i>Varanus flavescens</i>	1	0.42				
Fish	Seahorse	3	1.25				

Note: EN denotes Endangered, R denotes Rare, CR denotes Critically Endangered, LR denotes Lower Risk under IUCN Red Data List Status.

Note: CITES I stands for appendix I contain species deemed to be threatened with extinction which are affected by trade.

3.1.2. Status of confiscated body parts of wild fauna in Kathmandu valley

The skin, flesh, live and dead body, scales, tail, teeth are the major captured body parts in Kathmandu valley. In total, 292 confiscated body parts of wild fauna was captured in Kathmandu valley. Among them, 248 body parts (84.93%) were captured in Kathmandu district, 20 body parts (6.85%) in Lalitpur district and 24 body parts (8.22%) captured in Bhaktapur district. The highest number was of skin parts particularly 144 (58.06%) and 12 (50%) in Kathmandu and Bhaktapur districts respectively (Table 2).

Table 2: Status of confiscated body Parts of wild fauna in Kathmandu valley

Body part	Kathmandu		Lalitpur		Bhaktapur	
	Number	Percentage	Number	Percentage	Number	Percentage
Skin	144	58.06	1	5	12	50.00
Flesh	4	1.61	3	15	0	0.00
Live body	27	10.89	5	25	5	20.83
Dead body	3	1.21	4	20	1	4.17
Teeth	10	4.03	2	10	1	4.17
Tail	5	2.02	0	0	0	0.00
Sacles	16	6.45	2	10	5	20.83
Horn	9	3.63	1	5	0	0.00
Bone	6	2.42	0	0	0	0.00
liver	13	5.24	0	0	0	0.00
Antler	9	3.63	2	10	0	0.00
Fingure	1	0.40	0	0	0	0.00
Feather	1	0.40	0	0	0	0.00
Total	248		20		24	
Percentage	84.93		6.85		8.22	

The Kruskal Wallis test showed that, there was the significant difference in number of confiscated body parts captured in Kathmandu, Lalitpur and Bhaktapur Districts at 95% confidence level since P value 0.000 which was less than 0.05.

3.2. Trend of illegal trade of wildlife fauna

3.2.1. Status of Confiscated Trophies in Kathmandu Valley

The record of captured trophies was varying number in Kathmandu valley from 2008 to 2018. It was total 1383 trophies in Kathmandu district which were 67 and 37 in Lalitpur and Bhaktapur respectively (Figure 2).

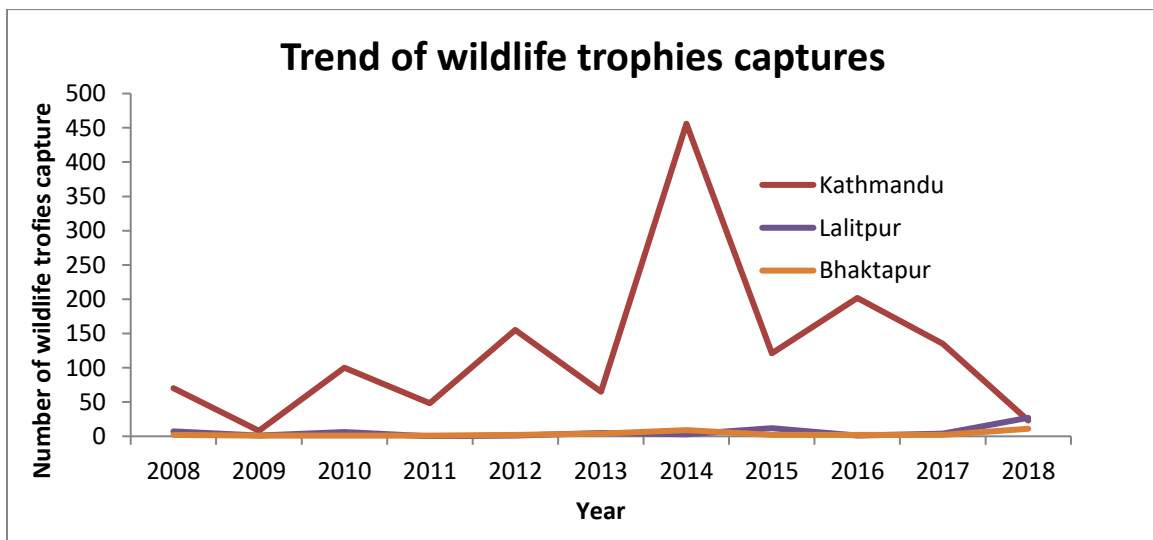


Figure 2: Status of Confiscated trophies in Kathmandu Valley

3.2.2. Number of Cases regarding wildlife trade in Kathmandu Valley

The filed cases were varying in the districts of Kathmandu valley. Altogether, it was 381 cases in Kathmandu valley. Most of the cases were recorded in Kathmandu district, it was about 325 (85.30%) from 2008 to 2018 but the most of the cases were recorded in 2016, it was 50 and 9 cases in Kathmandu and Lalitpur districts respectively. The numbers of complaints in Kathmandu district

were in increasing from 2008 to 2016 (except in the year 2009 with 3 complaints) which was from 9 to 50 complaints. The co-efficient variances of case registered were 0.162, 0.264 and 0.212 in Kathmandu, Lalitpur and Bhaktapur districts respectively. The less value of co-efficient of variance showed that the continuous efforts of government authority were effective at certain level to control the illegal trade of wildlife in Kathmandu valley. The Mann-Kenall's tau b correlation showed that the value of correlation coefficient were 0.587, 0.305 and 0.554 in Kathmandu, Lalitpur and Bhaktapur districts respectively. The correlation was significant at 95% confidence level only in Kathmandu district but insignificant in other districts. The Kruskal Wallis test showed that, there was a significant difference in number of complaints recorded regarding wildlife trade in Lalitpur, Kathmandu, Bhaktapur district at 95% confidence level since the significance p value 0.026 was less than 0.05 (Table 3).

Table 3: Number of cases regarding wildlife trade in Kathmandu valley

Year	Kathmandu		Lalitpur		Bhaktapur	
	Number	Percentage	Number	Percentage	Number	Percentage
2008	9	2.36	2	0.52	2	0.52
2009	3	0.79	1	0.26	1	0.26
2010	25	6.56	5	1.31	1	0.26
2011	34	8.92	0	0.00	1	0.26
2012	34	8.92	1	0.26	2	0.52
2013	35	9.19	2	0.52	4	1.05
2014	37	9.71	3	0.79	6	1.57
2015	48	12.60	9	2.36	2	0.52
2016	50	13.12	1	0.26	2	0.52
2017	40	10.50	4	1.05	2	0.52
2018	10	2.62	4	1.05	1	0.26
Total (381)	325	85.30	32	8.40	24	6.30

3.2.3. Categorized of illegal traded wildlife fauna in Kathmandu Valley

The captured wildlife trophies in Kathmandu valley can be categorized mainly into five main categories. These were mega carnivores and mega herbivores, birds, reptiles and butterfly. Most of these trophies were mega carnivores and mega herbivores in in Kathmandu valley from 2008 to 2018. Total 97 trophies (32%) fall under mega carnivores, 134 trophies (45%) under mega herbivores, 40 trophies (13%) under birds and 10 trophies (3%) under reptiles but remaining 20 trophies (7%) were not identified yet in Kathmandu district. Similar trend was recorded in Lalitpur and Bhaktapur districts as well that the highest number of trophies were under mega carnivores followed by mega herbivores (Table 4).

Table 4: Categorized of Illegal Trophies in Kathmandu Valley

	Mega																	
	Mega Carnivores			Herbivores			Birds			Reptiles			Butterfly			Not Identified		
Year	Kathmandu	Lalitpur	Bhaktapur	Kathmandu	Lalitpur	Bhaktapur	Kathmandu	Lalitpur	Bhaktapur	Kathmandu	Lalitpur	Bhaktapur	Kathmandu	Lalitpur	Bhaktapur	Kathmandu	Lalitpur	Bhaktapur
2008	6	1	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2009	1	0	0	0	0	1	3	0	0	0	0	0	0	1	1	0	0	0
2010	9	1	1	4	0	0	3	0	0	0	0	0	0	0	0	0	1	0
2011	7	0	0	16	0	0	2	0	1	0	0	0	0	0	0	0	0	0
2012	12	1	1	17	0	1	2	0	0	1	0	0	0	0	0	0	0	0
2013	10	0	1	17	1	4	7	0	0	3	0	0	0	0	0	0	1	0
2014	10	1	2	14	1	4	8	0	0	0	0	0	0	0	0	0	1	0
2015	16	1	0	20	3	1	5	0	0	2	3	1	0	0	0	4	0	0

2016	10	1	0	18	1	0	6	0	0	2	0	0	0	0	0	12	0	2
2017	11	1	1	20	3	0	3	0	0	2	0	1	0	0	0	5	0	0
2018	5	2	0	5	2	1	1	0	0	0	1	0	0	0	0	0	0	0

3.2.4. Involvement of persons in illegal wildlife activities recorded in Kathmandu valley

The record of Kathmandu valley showed the varying number of persons involved in wildlife crime based on the record of Kathmandu valley. Specifically, total 698 persons were involved in wildlife crime and out of them, 660 were male and 38 were female. There was the highest number of person involved recorded in 2016 with 110 male and 7 female in Kathmandu district in particular (Table 5).

Table 5: Involvement of people in illegal trade in Kathmandu district

Year	Number of person involved			Number of male			Number of female		
	Kathmandu	Lalitpur	Bhaktapur	Kathmandu	Lalitpur	Bhaktapur	Kathmandu	Lalitpur	Bhaktapur
2008	21	12	2	20	11	2	1	1	0
2009	7	4	1	7	4	1	0	0	0
2010	35	12	4	35	12	4	0	0	0
2011	84	0	6	83	0	6	1	0	0
2012	78	4	7	72	4	7	6	4	0
2013	86	5	15	79	0	15	7	5	0
2014	55	13	22	49	7	22	6	6	0
2015	111	21	6	104	21	6	7	0	0
2016	117	3	4	110	3	4	7	0	0
2017	83	7	8	80	7	8	3	0	0
2018	21	4	3	21	4	3	0	0	0

3.3. Legitimate deed of filed cases and dimension of captured specimen

3.3.1. Legitimate deed of illegal wildlife trade

The legitimate deed of filed cases was differed in Kathmandu, Lalitpur and Bhaktapur districts. Total decided cases in Kathmandu, Lalitpur and Bhaktapur districts were 172, 20 and 20 respectively. The maximum charge was US \$1,626.90 in Bhaktapur district while it was same US \$1305 in Kathmandu, and Lalitpur districts. The maximum imprisonment period was 79, 24 and 50 months in Kathmandu, Lalitpur and Bhaktapur respectively (Table 6).

Table 6: Filed cases and legal status of wildlife fauna in Kathmandu Valley

Details	Kathmandu	Lalitpur	Bhaktapur
Decided number of filed cases	172	20	20
Ongoing number of filed cases	120	12	4
Total number of filed cases	313	32	24
Maximum charge/fine (US \$)	1,305	1,305	1,626.90
Minimum Charge/fine (US \$)	43.50	43.50	87
Maximum imprisonment duration(Month)	79	24	50
Minimum imprisonment duration(Month)	2	1	24
Number of escaped (or abscond) persons	53	1	0

3.3.2. Dimension of captured body parts in Kathmandu valley

Total captured trophies in Kathmandu valley were different body parts of the wildlife. The highest records of body part of pangolin were found in Kathmandu district. Total weight of confiscated scales was 47.74kg in Kathmandu valley. It was the 140 cm length and 36 cm breadth of the captured leopard from Kathmandu district. The record of butterfly was not identified in Kathmandu district but the dead body was collected in Lalitpur district with the size of 0.031 kg. The flesh of deer species captured in Lalitpur district was 90kg. Some of the important species were Sea horse, Pheasant but some of them were unidentified species. The major species like red panda was found to be dead and its skin was confiscated. Another major species was elephant killed by poacher and collected some tails with the weight of 0.64kg in Kathmandu district. The highest record of trophies was found in Kathmandu district (Table 7).



Illegally captured specimen of wildlife

Table 7: Dimension of captured body parts in Kathmandu Valley

Species	Kathmandu				Lalitpur				Bhaktapur			
	Body Parts	Length (cm)	Breadth (cm)	Weight (kg)	Body Parts	Length (cm)	Breadth (cm)	Weight (kg)	Body Parts	Length (cm)	Breadth (cm)	Weight (kg)
Blue Sheep	Skull			5.5								
Pangolin	Scales			0.11	Scales			2	Scales			0.9
Pangolin	Scales			0.45	Scales			1	Scales			2
Pangolin	Scales			0.14					Scales			2.9
Pangolin	Scales			0.25								
Pangolin	Scales			1.5								
Pangolin	Dead animal			8.4								
Pangolin	Scales			4.9								
Pangolin	Scales			1.8								
Pangolin	Scales			3.8								
Pangolin	Scales			0.8								
Pangolin	Scales			1.9								
Pangolin	Scales			4								
Pangolin	Scales			3.2								
Pangolin	Scales			1.15								
Pangolin	Scales			0.114								
Pangolin	Scales			1.49								
Pangolin	Scales			0.097								

Pangolin	Scales			0.98								
Pangolin	Scales			1.27								
Pangolin	Scales			8.4								
Pangolin	Scales			1.1								
Pangolin	Scales			2								
Butterfly					Dead			0.031				
Red panda	Skin	55	34	2	Skin	45	25	1	Skin	80	55	1
Red panda	Skin			0.059	Skin			2	Skin			1.5
Deer	Antler	75	40		Flesh			50	Antler	55	15	
Deer	Antler			0.0063	Flesh			40	Antler			1.5
Deer	Antler			0.0089								
Elephant	Tail			0.3					Tusk	25	10	0.5
Elephant	Tail			0.34								
Sea horse	Dead animal			2.03								
Peacock	Feather			0.055								
Leopard	Skin	140	36									
Leopard	Skin	130	22									
Leopard	Skin			0.5								
Leopard	Skin			1								
Tiger	Bone	2.3	2.6		Skin	115	80	3.5				
Not identified	Body			0.097	Dead animal							
Not identified	Liver			0.059								
Not identified	Liver			0.38								
Not identified	Flesh			10	Flesh			10				
Pheasant									Dead	45		2.5

DISCUSSION

The fauna illegally captured in Kathmandu valley was the serious challenge since the captured trophies were higher number and some of them had protection status under CITES as well as IUCN red list. All together 327 wildlife trophies were captured within 10 years period from 2010 to 2019. Out of this 267, 32 and 28 trophies were captured in Kathmandu, Lalitpur and Bhaktapur districts respectively. The highest number of seizures in Kathmandu district was because of the international airport in Kathmandu which make easy for poacher to illegally export to foreign (Acharya *et al.*, 2018). Illegal trophies captured of different wild fauna listed under the protected status specifically, captured 12 mammals, 1 bird, 3 species of reptile falls under endangered categories of IUCN Red List in Kathmandu valley. Similarly, the lowest captured mammal species falls under Endangered of IUCN Red list following by the CITES I in Bhaktapur district. Indeed, there is only one international airport in Nepal so, this is the hub of illegal wildlife trade (Basnet, 2003; Bhattarai and Fischer, 2014). Alike, of the 10,272 currently known reptile species, the trade of fewer than 8% are regulated by the CITES and the European Wildlife Trade Regulations (Auliya *et al.*, 2016). Conversely, the IUCN Red List has assessed 45% of the world's reptile species and determined that at least 1390 species are threatened by biological resource use (Auliya *et al.*, 2016, Karmacharya *et al.*, 2018).

There were varieties of body parts captured in Kathmandu valley and it was 292 in total. Among them, 248 body parts (85%) were captured in Kathmandu district followed by 20 body parts (7%) in Lalitpur district and 24 body parts (8%) in Bhaktapur district. The variation of wildlife seizure was because the most of illegal deal of illegal trade may be in Kathmandu district (Paudel

et al., 2020), especially. More specific, there were 144 skin parts (58% of total body parts captured in Kathmandu district) captured in Kathmandu district and 12 body parts (50% of total body parts captured in Bhaktapur district) in Bhaktapur district. More than 30,000 species of flora and fauna are listed under the Appendices of the CITES (Abensperg-Traun, 2009; Daut *et al.*, 2016). At least 44 % wildlife trophies captured in Kathmandu valley were under different degree of protection status and mostly, were within the CITES appendixes (Natusch and Lyons, 2012).

The legal action was taken satisfactory to control the illegal activities in Kathmandu valley. In total, 381 complaints were recorded on which, it was 325 (85%), 32 (9%) and 24 (6%) from Kathmandu, Lalitpur and Bhaktapur respectively from 2008 to 2018. Likewise, significant levels of trade in 2 or 3 species of night monkeys from the Brazil-Colombia-Peru tri-border area. All 3 countries are Party to the CITES and there is no renowned trade in night monkeys among these 3 countries in the CITES trade database (Maldonado *et al.*, 2009).

Higher number of illegal trophies falls under mega carnivores and mega herbivores in Kathmandu valley. Total 97 trophies (32%) fall under mega carnivores, 134 trophies (45%) under mega herbivores, 40 trophies (13%) under birds and 10 trophies (3%) under reptiles' categories and remaining 20 trophies (7%) were not identified yet in Kathmandu district. Similar trend or magnitude of categorizing fauna was observed in Lalitpur and Bhaktapur districts. Study done by Thapa, (2016) emphasized that intensive action is needed against the crime of fascinating mega-fauna such as wolves (*Canis lupus*). It is essential to changes in wildlife-related policy to control the wildlife crime (Bruskotter *et al.*, 2007).

Total of 698 people were involved in wildlife crime, specifically they were 660 male and 38 female in Kathmandu valley. There was the highest number of person involved in this illegal business in 2016, where there were 110 male and 7 female from Kathmandu district. These seizures were little less in Lalitpur and Bhaktapur. The seizure of birds in the state of Amazon during twenty years (1992- 2011) showed the significant sale of birds but only 297 (11%) birds were seized (do Nascimento *et al.*, 2015). However, continuous efforts result to minimize the number illegal trades (Martin *et al.* 2013; Dhakal *et al.*, 2014). So, efforts are being effective to minimize rate of illegal trade in Nepal too (Baral and Heinen, 2005; Sharma, 2015; Sudmeier-Rieux *et al.*, 2015). Higher number of pangolin was recorded in Kathmandu district, and the weight of seized scale was about 47.74kg. Similarly, captured leopard in Kathmandu district was 140 cm long and 36 cm wide. The confiscated skin of tiger having 2.3 m long and 2.6 m was seized in Kathmandu district. There was the highest number of trophies in Kathmandu district. The study done by (Cheng *et al.*, 2017) showed that 21,377 kg of scales was seized in China which showed 23,109 individuals were killed for this.

The legitimate deed is indeed effective in Kathmandu valley. The maximum charge was reported around US \$1305 in for wildlife crime in Kathmandu valley which was US \$43.5 as a minimum punishment. There were 172 file cases indubitably decided and 20 files were decided in Bhaktapur and Lalitpur district. The maximum imprisonment period was 79, 24 and 50 months in Kathmandu, Lalitpur and Bhaktapur districts respectively. Seventy percent of prosecutions was a fine and it was only US \$30,000 but this value is less than the black market value of the seized goods (Alacs and Georges, 2008). The local level people have also mobilized to control the illegal wildlife trade (Ferrie *et al.*, 2014).

CONCLUSION AND RECOMMENDATION

The records of illegal captured trophies showed the highest number in Kathmandu district followed by Lalitpur. Major traded species are Leopards, Pangolin and Red panda followed by Illegal trade in Kathmandu valley. Major illegally traded species are tiger, red panda, wolf, elephant, rhino, clouded leopard. Most of the illegally traded species are under endangered categories of IUCN Red List and CITES appendix-I and II. It shows that the trend of trade is very sensitive to major protected species and also endangered species. Various parts of wildlife were recorded which were skin, scale, flesh, alive animal, horn, skull, dead body, antler and other parts. The highest number of convicted persons was found in Kathmandu followed by Lalitpur and the majority of them were male. The findings of the study will be useful to understand the captured wildlife fauna, their protection status as well as further management options required. Further action base research is essential to control the illegal trade of wildlife in Kathmandu since it is the hub of illegal trade.

Funding:

This study has not received any external funding.

Conflict of Interest:

The authors declare that there are no conflicts of interests.

Peer-review:

External peer-review was done through double-blind method.

Data and materials availability:

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Abensperg-Traun, M., (2009). CITES, sustainable use of wild species and incentive-driven conservation in developing countries, with an emphasis on southern Africa. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2008.12.034>
2. Acharya, S.; Rayamajhi, S.; Sharma, S.; Upadhaya, S., Joshi, S., (2018). Anthropogenic Threats to Survival of the Critically Endangered Chinese Pangolins (*Manis pentadactyla*) and their Habitat in Kavrepalanchowk Nepal. *Journal of Biodiversity & Endangered Species*. <https://doi.org/10.4172/2332-2543.1000218>
3. Alacs, E.; Georges, A., (2008). Wildlife across our borders: A review of the illegal trade in Australia. *Australian Journal of Forensic Sciences*. <https://doi.org/10.1080/00450610802491382>
4. Auliya, M.; Altherr, S.; Ariano-Sanchez, D.; Baard, E. H.; Brown, C.; Brown, R. M.; Ziegler, T., (2016). Trade in live reptiles, its impact on wild populations, and the role of the European market. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2016.05.017>
5. Baker, S. E.; Cain, R.; Zommers, Z. A.; MacDonald, D. W.; Kesteren, F. Van; D'Cruze, N., (2013). Rough trade: Animal welfare in the global wildlife trade. *BioScience*. <https://doi.org/10.1525/bio.2013.63.12.6>
6. Baral, N.; Heinen, J. T., (2005). The Maoist people's war and conservation in Nepal. *Politics and the Life Sciences*. <https://doi.org/10.1017/s0730938400007541>
7. Basnet, K., (2003). Transboundary Biodiversity Conservation Initiative: An Example from Nepal. *Journal of Sustainable Forestry*. https://doi.org/10.1300/J091v17n01_12
8. Bhattarai, B. R.; Fischer, K., (2014). Human-tiger *Panthera tigris* conflict and its perception in Bardia National Park, Nepal. *ORYX*. <https://doi.org/10.1017/S0030605313000483>
9. Bruskotter, J. T.; Schmidt, R. H.; Teel, T. L., (2007). Are attitudes toward wolves changing? A case study in Utah. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2007.06.016>
10. Challender, D. W. S.; Harrop, S. R.; MacMillan, D. C., (2015). Understanding markets to conserve trade-threatened species in CITES. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2015.04.015>
11. Chaudhary, R. P., (1970). How to control illegal wildlife trade in the Himalayas. *Himalayan Journal of Sciences*. <https://doi.org/10.3126/hjs.v2i3.223>
12. Cheng, W.; Xing, S.; Bonebrake, T. C., (2017). Recent Pangolin Seizures in China Reveal Priority Areas for Intervention. *Conservation Letters*. <https://doi.org/10.1111/conl.12339>
13. Daut, E. F.; Brightsmith, D. J.; Peterson, M. J., (2015). Role of non-governmental organizations in combating illegal wildlife-pet trade in Peru. *Journal for Nature Conservation*. <https://doi.org/10.1016/j.jnc.2014.10.005>
14. Dhakal, M.; Karki (Thapa); M., Jnawali; S. R., Subedi; N., Pradhan, N. M. B.; Malla, S.; Yadav, H., (2014). Status of tigers and Prey in Nepal. In *Technical Report*.
15. do Nascimento, C. A. R.; Czaban, R. E.; Alves, R. R. N., (2015). Trends in illegal trade of wild birds in Amazonas state, Brazil. *Tropical Conservation Science*. <https://doi.org/10.1177/194008291500800416>
16. Duffy, R.; St John, F. A. V.; Büscher, B.; Brockington, D., (2016). Toward a new understanding of the links between poverty and illegal wildlife hunting. *Conservation Biology*. <https://doi.org/10.1111/cobi.12622>
17. Ferrie, G. M.; Farmer, K. H.; Kuhar, C. W.; Grand, A. P.; Sherman, J.; Bettinger, T. L., (2014). The social, economic, and environmental contributions of Pan African Sanctuary Alliance primate sanctuaries in Africa. *Biodiversity and Conservation*. <https://doi.org/10.1007/s10531-013-0592-3>
18. Ghimirey, Y.; Acharya, R., (2018). The Vulnerable clouded leopard *Neofelis nebulosa* in Nepal: An update. *ORYX*. <https://doi.org/10.1017/S0030605316000582>
19. Humagain, K.; & Shrestha, K. K., (2010). Medicinal plants in Rasuwa district, central Nepal: trade and livelihood. *Botanica Orientalis: Journal of Plant Science*. <https://doi.org/10.3126/botor.v6i0.2909>
20. Karesh, W. B.; Cook, R. A.; Bennett, E. L.; Newcomb, J., (2005). Wildlife trade and global disease emergence. *Emerging Infectious Diseases*. <https://doi.org/10.3201/eid1107.050194>
21. Karmacharya, D.; Sherchan, A. M.; Dulal, S.; Manandhar, P.; Manandhar, S.; Joshi, J.; Hughes, J., (2018). Species, sex and geo-location identification of seized tiger (*Panthera tigris*) parts in Nepal A molecular forensic approach. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0201639>
22. Krishnasamy, K.; Stoner, S., (2016). Trading Faces: A Rapid Assessment on the use of Facebook to Trade Wildlife in Peninsular Malaysia. In *Traffic Southeast Asia*. <https://doi.org/10.13140/RG.2.1.4728.5362>

23. Lawson, K.; Vines, A.; Chu, Y.; Meyers A, M. A.; Wang, B.; Yang, W., (2014). Global Impacts of the Illegal Wildlife Trade Global Impacts of the Illegal Wildlife Trade: The Costs of Crime, Insecurity, and Institutional Erosion. *Report to the African Elephant Summit*. <https://doi.org/10.1038/srep14387>
24. Lindsey, P. A.; Romañach, S. S.; Tambling, C. J.; Chartier, K.; Groom, R., (2011). Ecological and financial impacts of illegal bushmeat trade in Zimbabwe. *ORYX*. <https://doi.org/10.1017/S0030605310000153>
25. Maldonado, A. M.; Nijman, V.; Bearder, S. K., (2009). Trade in night monkeys *Aotus* spp. in the Brazil-Colombia-Peru tri-border area: International wildlife trade regulations are ineffectively enforced. *Endangered Species Research*. <https://doi.org/10.3354/esr00209>
26. Martin, E.; Martin, C.; Vigne, L., (2013). Successful reduction in rhino poaching in Nepal. *Pachyderm*.
27. Natusch, D. J. D.; Lyons, J. A., (2012). Exploited for pets: The harvest and trade of amphibians and reptiles from Indonesian New Guinea. *Biodiversity and Conservation*. <https://doi.org/10.1007/s10531-012-0345-8>
28. Nijman, V., (2010). An overview of international wildlife trade from Southeast Asia. *Biodiversity and Conservation*. <https://doi.org/10.1007/s10531-009-9758-4>
29. Paudel, K.; Potter, G. R.; Phelps, J., (2020). Conservation enforcement: Insights from people incarcerated for wildlife crimes in Nepal. *Conservation Science and Practice*, 2(2), e137.
30. Phelps, J.; Biggs, D.; Webb, E. L., (2016). Tools and terms for understanding illegal wildlife trade. *Frontiers in Ecology and the Environment*. <https://doi.org/10.1002/fee.1325>
31. Pires, S. F.; Schneider, J. L.; Herrera, M., (2016). Organized crime or crime that is organized? The parrot trade in the neotropics. *Trends in Organized Crime*. <https://doi.org/10.1007/s12117-015-9259-7>
32. Thapa R., (2016). Poaching Statistics of Rhinoceros Unicornis in Chitwan National Park, Nepal: a Review. *International Journal of Applied and Natural Sciences (IJANS)*.
33. Regueira, R. F. S.; Bernard, E., (2012). Wildlife sinks: Quantifying the impact of illegal bird trade in street markets in Brazil. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2012.02.009>
34. Rosen, G. E.; Smith, K. F., (2010). Summarizing the evidence on the international trade in illegal wildlife. *EcoHealth*. <https://doi.org/10.1007/s10393-010-0317-y>
35. Sharma, N. P., (2015). Wildlife Crimes: Causative Factors, Volume, Impact and Measures for Control. *NJA Law Journal*.
36. Smith, K. M.; Anthony, S. J.; Switzer, W. M.; Epstein, J. H.; Seimon, T.; Jia, H.; Marano, N., (2012). Zoonotic viruses associated with illegally imported wildlife products. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0029505>
37. Sollund, R., (2013). Animal Trafficking and Trade: Abuse and Species Injustice. In *Emerging Issues in Green Criminology*. https://doi.org/10.1057/9781137273994_5
38. Sudmeier-Rieux, K.; Fra.Paleo, U.; Garschagen, M.; Estrella, M.; Renaud, F. G.; Jaboyedoff, M., (2015). Opportunities, incentives and challenges to risk sensitive land use planning: Lessons from Nepal, Spain and Vietnam. *International Journal of Disaster Risk Reduction*. <https://doi.org/10.1016/j.ijdrr.2014.09.009>
39. Symes, W. S.; McGrath, F. L.; Rao, M.; Carrasco, L. R., (2018). The gravity of wildlife trade. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2017.11.007>
40. Thapa, P.; Khatiwada, A. P.; Nepali, S. C.; Paudel, S., (2014). Distribution and Conservation Status of Chinese Pangolin (*Manis pentadactyla*) in Nangkholyang VDC, Taplejung, Eastern Nepal. *American Journal of Zoological Research*. <https://doi.org/10.12691/ajzr-2-1-3>
41. Williams, H. O.; Grante, V. T., (2011). Illegal trade in wildlife. In *Illegal Trade In Wildlife*.
42. Wyler, L. S.; Sheikh, P. A., (2016). International illegal trade in wildlife: Threats and U.S. policy. In *Combating Wildlife Trafficking: National Strategy, Implementation Plan and Restrictions on Elephant Ivory Trade*.
43. Zhang, L.; Hua, N.; Sun, S., (2008). Wildlife trade, consumption and conservation awareness in southwest China. *Biodiversity and Conservation*. <https://doi.org/10.1007/s10531-008-9358-8>

Peer-review

External peer-review was done through double-blind method.

Peer-Review History

Received: 04 November 2020

Reviewed & Revised: 06/November/2020 to 17/January/2021

Accepted: 19 January 2021

Prepared: 21 January 2021

Published: February 2021

Publication License



© The Author(s) 2021. Open Access. This article is licensed under a [Creative Commons Attribution License 4.0 \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).

General Note



We recommended authors to print article as color digital version in recycled paper.